

Appl. No. 10/707,438
Amdt. dated July 12, 2006
Reply to Office action of May 16, 2006

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

5 Listing of Claims

Claim 1 (Currently Amended): A television (TV) tuner comprising:

- a first mixer for producing an intermediate frequency signal according to a received RF signal;
- 10 a notch filter for filtering an image signal of the intermediate frequency signal, the notch filter comprising:
 - a first passive circuit coupled between an input and an output of the notch filter;
 - at least two frequency-dependent passive circuits coupled to the first passive circuit, the frequency-dependent passive circuits comprising at least a capacitor
 - 15 or an inductor; and
 - a second passive circuit coupled to at least one of the frequency-dependent passive circuits;
- a band-pass filter for passing the intermediate frequency signal; and
- a second mixing unit for producing an output signal according to the passed
- 20 intermediate frequency signal[.];
- wherein at least one of the frequency-dependent passive circuits or the second passive circuit couples to a constant reference voltage.

- Claim 2 (Currently Amended): The TV tuner of claim 1, wherein the notch filter
- 25 comprises:
- the first passive circuit being an inductor coupled between [[an]]the input and [[an]]the output of the notch filter;
 - the frequency-dependent passive circuits being a first capacitor and a second

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capacitor respectively coupled to the input and the output of the notch filter; and
a second capacitor coupled between the output and the first capacitor; and
[[a]]the second passive circuit being a resistor coupled to the first capacitor, the
second capacitor, and the ground constant reference voltage.

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Claim 3 (Original): The TV tuner of claim 1, further including a first local oscillator for providing a first local oscillating signal to the first mixer, wherein the frequency of the first local oscillating signal is variable and is determined according to the frequency range of the received RF signal.

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Claim 4 (Original): The TV tuner of claim 3, wherein the first mixer is a harmonic mixer and the first local oscillating signal further includes a first reference signal and a second reference signal being the first reference signal phase shifted by 90 degrees.

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Claim 5 (Original): The TV tuner of claim 1, wherein the second mixing unit is a mixer and the TV tuner further includes a second local oscillator for providing a second local oscillating signal to the second mixing unit, wherein the frequency of the second local oscillating signal is fixed and is determined according to the frequency range of the received RF signal.

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Claim 6 (Original): The TV tuner of claim 5, wherein the second mixing unit is a harmonic mixer and the second local oscillating signal further includes a third reference signal and a fourth reference signal, the fourth reference signal being the third reference signal phase shifted by 90 degrees.

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Claim 7 (Original): The TV tuner of claim 1, wherein the second mixing unit further includes a third mixer for mixing the passed intermediate frequency signal to generate an in-phase baseband signal and a fourth mixer for mixing the passed

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intermediate frequency signal to generate a quadrature-phase baseband signal.

5 Claim 8 (Original): The TV tuner of claim 7, wherein the third mixer further includes a second local oscillator for providing a third local oscillating signal to the third mixer and a fourth local oscillating signal to the fourth mixer, wherein the frequency of the third and the fourth local oscillating signal is fixed and is determined according to the frequency range of the received RF signal and the fourth local oscillating signal being the third local oscillating signal phase shifted by 90 degrees.

10 Claim 9 (Original): The TV tuner of claim 8, wherein the third and the fourth mixers are harmonic mixers, the third local oscillating signal further includes a fifth reference signal and a sixth reference signal, and the fourth local oscillating signal further includes a seventh reference signal and a eighth reference signal, wherein the sixth reference signal is the fifth reference signal phase shifted by 90 degrees, the seventh reference signal is the fifth reference signal phase shifted by 45 degrees, and the
15 eighth reference signal is the fifth reference signal phase shifted by 135 degrees.

Claims 10-12 (Cancelled)

20 Claim 13 (New): The TV tuner of claim 1, wherein the first passive circuit is an inductor.

Claim 14 (New): The TV tuner of claim 1, wherein the constant reference voltage is the ground voltage.

25 Claim 15 (New): The TV tuner of claim 1, wherein the notch filter is a passive notch filter.

Claim 16 (New): The TV tuner of claim 1, further comprising a first local oscillator for

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providing a first local oscillating signal to the first mixer, wherein the frequency range of the first local oscillating signal is narrower than the frequency range of the received RF signal.

- 5 Claim 17 (New): The TV tuner of claim 16, wherein the frequency of the first local oscillating signal is lower than the frequency of the passed intermediate frequency signal.

- 10 Claim 18 (New): The TV tuner of claim 16, wherein the frequency range of the received RF signal is a multiple of the frequency range of the first local oscillating signal.

Claim 19 (New): A television (TV) tuner comprising:

- 15 a first mixer for generating an intermediate frequency signal according to a received RF signal;
a first oscillator for providing a first oscillating signal to the first mixer;
a notch filter for generating a filtered intermediate frequency signal according to the intermediate frequency signal;
a band-pass filter for generating a passed intermediate frequency signal according to the filtered intermediate frequency signal; and
20 a second mixing unit for producing an output signal according to the passed intermediate frequency signal;
wherein the frequency range of the first local oscillating signal is narrower than the frequency range of the passed intermediate frequency signal.

- 25 Claim 20 (New): The TV tuner of claim 19, wherein the frequency range of the received RF signal is a multiple of the frequency range of the first oscillating signal.

Claim 21 (New): The TV tuner of claim 19, wherein the first oscillating signal comprises

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a first reference signal and a second reference signal.

Claim 22 (New): The TV tuner of claim 21, wherein the second reference signal is the first reference signal phase shifted by 90 degrees.

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Claim 23 (New): The TV tuner of claim 19, wherein the second mixing unit is a mixer and the TV tuner further includes a second oscillator for providing a third reference signal and a fourth reference signal to the second mixing unit.

10 Claim 24 (New): The TV tuner of claim 23, wherein the phase of the third reference signal is different from the phase of the fourth reference signal.